

DETAILED ACTION

1. This application is responsive to application number (10501424) filed on July 13, 2004. Claims 1-20 are pending and have been examined.

Response to Arguments

2. Applicant's arguments with respect to claims 1-20 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4, 7 and 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by De Haan et al (US 6, 278, 736, hereafter De Haan).

As per **claim 1**, De Haan discloses a motion estimation unit for estimating a current motion vector for a group of pixels of an image, comprising:

generating means for generating a set of candidate motion vectors for the group of pixels, with the candidate motion vectors being extracted from a set of previously estimated motion vectors (column 2 lines 51 - 59);

a match error unit for calculating match errors of respective candidate motion vectors (Col 3 lines 57 - 65); and

a selector for selecting the current motion vector from the candidate motion vectors by means of comparing the match errors of the respective candidate motion vectors (column 3 lines 51 - 59), characterized in that the motion estimation unit is arranged to add a further candidate motion vector to the set of candidate motion vectors by calculating this motion vector on basis of a first motion vector and a second motion vector, both belonging to the set of previously estimated motion vectors (column 5 lines 61 - 67).

As per **claim 2**, De Haan discloses a motion estimation unit as claimed in claim 1, characterized in that the selector is arranged to select, from the set of candidate motion vectors, a particular motion vector as the current motion vector, if the corresponding match error is the smallest of the match errors (column 4 lines 10 - 23).

As per **claim 3**, De Haan discloses a motion estimation unit as claimed in claim 1, characterized in that the match error unit is designed to calculate a first one of the match errors by means of subtracting luminance values of pixels of blocks of pixels of respective images of a first image pair (column 4 lines 24 - 30).

As per **claim 4**, De Haan discloses a motion estimation unit as claimed in claim 1, characterized in being arranged to calculate the further candidate motion vector on basis of the first motion vector and the second motion vector, with the first motion vector belonging to a first forward motion vector field and the second motion vector belonging to a second motion vector field, with the first forward motion vector field and the second

forward motion vector field being different (column 6 lines 54 – 57, column 7 lines 7 – 10 and lines 22-40; De Haan discloses using two independent motion vectors and further describes using different combinations and further describes two forward motion vectors).

Regarding **claim 7**, arguments analogous to those presented for claim 4 are applicable for claim 7 (De Haan discloses arranging the two independent motion vectors in different combinations).

Regarding **claim 12**, arguments analogous to those presented for claim 1 are applicable for claim 12.

Regarding **claim 13**, arguments analogous to those presented for claim 1 are applicable for claim 13.

Regarding **claim 14**, arguments analogous to those presented for claim 1 are applicable for claim 14.

As per **claim 20**, De Haan discloses the motion estimation of claim 1, wherein the set of previously estimated motion vectors belong to the same motion vectors that is related to a zoom (column 5 lines 15 - 25).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 9, 11, 15, and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over De Haan et al (US 6,278,736) in view of well-known knowledge.

As per **claim 9**, De Haan discloses a motion estimation unit as claimed in claim 1, characterized in being arranged to calculate the further candidate motion vector on basis of the first motion vector and the second motion vector, with the first motion vector belonging to a fourth forward motion vector field and the second motion vector belong to a first backward motion vector field (column 6 lines 54 – 57, column 7 lines 7 – 10 and lines 22-40; De Haan discloses using two independent motion vectors and further describes using different combinations and further describes two forward motion vectors).

However, De Haan does not explicitly teach the first motion vector belonging to a fourth forward motion vector field and the second motion vector belonging to a first backward motion vector field.

In the same field of endeavor, the first motion vector belonging to a fourth motion vector field and the second motion vector field belonging to a first backward motion vector field (one of ordinary skill in the art in view of well-known knowledge about spatial

and temporal motion vectors and the description of applying different combinations in De Haan).

Therefore, it would have been obvious for one having skill in the art at the time of the invention to modify the invention of De Haan with well known knowledge. The advantage would be increasing the chance of finding the optimum motion vector through using parameters for panning and zooming.

Regarding **claim 11**, arguments analogous to those presented for claim 9 are applicable for claim 11.

Regarding **claim 15**, arguments analogous to those presented for claim 4 are applicable for claim 15.

Regarding **claim 17**, arguments analogous to those presented for claim 7 are applicable for claim 17.

Regarding **claim 18**, arguments analogous to those presented for claim 9 are applicable for claim 18.

Allowable Subject Matter

8. Claims 5, 6, 8, 10, 16, and 19 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **CHIKAODILI E. ANYIKIRE** whose telephone number is (571)270-1445. The examiner can normally be reached on **Monday to Friday, 7:30 am to 5 pm, EST**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Marsha D. Banks-Harold** can be reached on (571) 272 - 7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Marsha D. Banks-Harold/
Supervisory Patent Examiner, Art Unit 2621

/Chikaodili Anyikire/
Patent Examiner AU 2621